



PATENT
21101-0006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yoel Wazana, et al.

Serial No.: 10/659,881

Filing Date: September 11, 2003

For: APPARATUS AND METHOD FOR
DISASSEMBLING CONTAINERS
HAVING THERMOPLASTIC
JOINING SURFACES

Examiner: To Be Assigned

Art Unit No.: 2852 (Expected)

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INFORMATION DISCLOSURE STATEMENT

Dear Sir:

1. Preliminary Statements

Applicants submit herewith a copy of each of the patents and publications of which Applicants are aware, as listed on the enclosed Form PTO/SB/08 which Applicants believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 C.F.R. §§ 1.56, 1.97 and 1.98. It is to be noted that the seven patents and one published application for patent submitted herewith are submitted concurrently with Applicants' Petition to Make Special under M.P.E.P § 708.02, VIII.

While this Information Disclosure Statement may be “material” pursuant to 37 C.F.R. § 1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is “prior art” for this invention unless specifically designated as such.

In accordance with 37 C.F.R. § 1.97(b), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56 (a) exists. This Information Disclosure Statement is filed pursuant to 37 C.F.R. § 1.97(b)(1) within three months of the filing date of a national application.

2. Discussion of the References

Each of the references listed on the attached Form PTO/SB/08 is directed to some aspect of a method and apparatus for disassembling toner container having thermoplastic joining surfaces.

U.S. Patent No. 4,549,066 for a Trimming of Polyester Containers Using a Laser

U.S. Patent No. 4,549,606 (“606 patent”) discloses a process and apparatus for the cutting or trimming of a blow molded polyester resin article utilizing a CO₂ laser. The blow

molded polyester resin article is illustrated in element 10 of Fig. 2. Fig. 2 discloses an apparatus for laser trimming the bottle-shaped resin article (col. 2, line 19 to col. 3, line 62). The apparatus includes a support 22 for receiving a base portion of the blow molded article. The support rotates the blow molded article for the laser (col. 2, line 25-40). The laser portion includes adjustable head 86 (col. 2, line 65 to col. 3, line 45) for directing the cutting location for the laser. The adjustable head allows the laser to cut bottle-shaped blow mold article of various sizes (col. 3, line 43-46).

However, the '606 patent does not disclose a laser light path and a gimbal that is operationally connected to a computer processor. In the present invention, both the gimbal and the light path of the laser are "operationally connected with" the computer processor and are under command of the computer processor. The combination provides precision cutting required for disassembling thermoplastic container without damaging fragile components embedded within the toner cartridge.

U.S. Patent No. 4,851,061 for a Method and Apparatus for Patterned Cut of Thermoplastics

U.S. Patent No. 4,851,061 ("061 patent") discloses a method and apparatus for cutting thermoplastic materials in an aesthetically pleasing fashion. The laser is directed to cut a pre-selected pattern in a thermoplastic material (abstract). The pattern results in a cut-out shape

that can be separated from the thermoplastic material as illustrated in Figs 3-5. The '061 invention discloses a fixed laser cutting tool 2, with the controller 6 (numeric processor) controlling movement of the table on which the thermoplastic substrate is mounted (col. 3, line 45-61). Thus the table, along with thermoplastic substrate mounted on the table, moves in relation to the laser cutting tool to achieve the effect of cutting the pre-selected pattern.

In contrast, in the present invention both the gimbal and the light path of the laser are “operationally connected with” the computer processor and are under command of the computer processor. The combination provides precision cutting that takes into account shape, composition, and thickness of the joining surfaces. The precise cutting achieved is used for disassembling thermoplastic container without damaging fragile components embedded within the toner cartridge.

**U.S. Patent No. 6,007,756 for a Process and Device for Perforating or Cutting
Printed Laminated Composite Materials**

U.S. Patent No. 6,007,756 (“756 patent”) discloses a process and device for perforating and/or cutting printed laminated composite materials by means of laser beams from at least one laser arranged in a laser station. The invention relates to a device and process for making perforations and/or semi-cuts in printed multi-layer composite material by means of laser beams (col. 1, line 5-10). The device comprises “a laser station with at least

one laser and respective deflector devices for guiding each laser beam as well as limit-stop means for positioning the individual cut shapes fed to the laser station” (col. 2, line 14-16). Figs. 1-3 show various embodiments in which the stack of cut shapes 1 are arranged to be cut by laser 2 (col. 3, line 43-50). The cut shapes are fed to be in various stacks in series, with the laser operating on one stack at a time (col. 3, line 53-67, Fig. 1). However, the ‘756 patent does not disclose an apparatus for cutting a thermoplastic container that comprises the elements of computer processor-controlled gimbal and laser light path.

U.S. Patent No. 6,207,925 for an Apparatus for Cutting And/Or Welding

Flexible Packaging

U.S. Patent No. 6,207,925 (“925 patent”) discloses an apparatus for welding and/or cutting flexible packaging material using lasers. The disclosed device is directed to cutting plastics material moving at a high speed (e.g. in an assembly line). The laser source is divided into three beams at component 3 and reflected by mirror 8 onto substrate 1 (Fig. 1, col. 3, line 43 to col. 4, line 33). The laser source is fixed, with the angle of the incident laser light adjusted by mirror 8 (co. 4, line 26-49). As it does not disclose a gimbal or laser light path guided by computer processor, the ‘925 invention does not disclose the thermoplastic container disassembly apparatus of the present invention.

U.S. Patent No. 6,233,010 for a Resin Product, Method of Disassembling the Resin Product, Process Cartridge, Method of Disassembling the Process Cartridge, and Electrophotographic Image Forming Apparatus

U.S. Patent No. 6,233,010 (“’010 patent”) discloses a resin product that has at least two resin molded parts and a recyclable part as constituent parts. The ‘010 patent further discloses a method by which the resin product is comprised of two material layers, one easily cut by a laser and the other not easily cut by a laser. The ‘010 patent discloses seven embodiments of a resin-based process cartridge. Each embodiment shares the common feature that a protective material (e.g. metal foil) is provided in the cartridge to cover parts that can be damaged by the laser. Hence the laser can be used to cut through the covering of the cartridge without damaging the internal components protected by the protective material.

For example, in the first embodiment shown in Fig. 3 (col. 9, line 33+), a metal foil 15 is inserted to protect portion 10a1 of toner feeding member 10a (col. 10, line 23-34). The ‘010 patent states, “the metal foil is difficult to cut by the laser, ... as compared with the resin materials of the parts to be cut, i.e. the toner frame 12a...” (col. 10, line 35-37). Other embodiments disclose the same method of inserting a special protective layer. Examples include: in the second embodiment, thin film coating 16 (col. 11, line 27-48, Fig. 4), in the third embodiment, metal foil layer 15 (col. 12, line 18-42, Fig. 5), in the fourth embodiment, metal foil layer 15 (col. 13, line 15-51, Fig. 6) and so on. The intent is to manufacture a toner

cartridge with these protective layers incorporated over sensitive recyclable internal components so that laser can be directly applied to various cutting positions during the recycling process.

However, the '010 patent fails to disclose any cutting apparatus including a gimbal and a laser cutting path operationally connected to a computer processor. It merely mentions that the laser can be used in conjunction with its specially made toner cartridge. In fact, contrary to the approach of the present invention of precisely guiding the path and speed of the moving laser to control the location and depth of the cut around fragile components, the '010 patent in contrast approaches the recycling problem by choosing to add special protective layers built in to the cartridge to protect the internal components.

U.S. Patent No. 6,491,361 for a Digital Media Cutter

U.S. Patent No. 6,491,361 ("361 patent") discloses a printer that includes a rasterized laser illumination system. It combines a conventional printer with laser cutting apparatus so that cutting and printing of media can be performed in the same machine (col. 2, line 43-46).

It teaches a moving carriage for scanning the media and media transport mechanism that increments the media for printing and cutting (col. 3, line 31-39). However, it does not teach a "gimbal operationally connected" to a computer processor that is "adapted to rotate with respect to at least one axis" and "adapted to removably retain a container to be disassembled"

as claimed in the present invention. Hence the '361 patent does not teach the laser cutting apparatus of the present invention and is not applicable to disassembling toner cartridges.

U.S. Patent No. 6,653,210 for a Method and Apparatus for Cutting a Non-Metallic Substrate Using a Laser Beam

U.S. Patent No. 6,653,210 ("210 patent") discloses a method and apparatus for cutting a non-metallic substrate by a laser. The invention is relates to cutting of glass and silicon (col. 3, line 60-65) by only using a scribing laser beam and a breaking laser beam. The two beams work in conjunction with each other to cut a glass surface, with the scribing beam being used first to create a narrow crack having a depth several times greater than its width in the glass surface and the breaking laser beam then used to cut along the crack created by the scribing laser without heating the glass above its fusing limit, to prevent the scribed crack from resealing or closing (col. 4, line 1-10). Unlike the present invention, the '210 patent does not teach a cutting by heating the substrate above its fusing or melting point; "gimbal adapted to removably retain a container to be disassembled" and does not have any teaching toward methods of disassembling toner cartridges using a laser cutting apparatus.

U.S. Published Patent Application No. 2004/0067326 A1 for a Multi-Layer Flexible Package with Removable Section

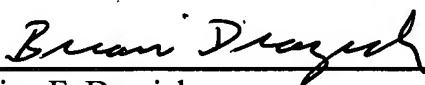
U.S. Patent Application No. 2004-0067326 ("326 patent application") discloses a flexible container with a wall structure comprised of multi-layer, flexible thin, films, including a first film layer that is affixed to the wall structure by a releasable adherence and that incorporates a removable promotional piece. The promotional piece is affixed to multi-layer films packaging in such a way as to enable removal of the piece without damage to the packaging (paragraph 0019). The 326 application only mentions a cutting tool 60 for cutting a thin film layer (paragraph 0030), and does not have any teaching directed toward an apparatus for disassembling toner cartridge.

3. Fees

No fees are believed to be outstanding pursuant to 37 C.F.R. § 1.97(b)(1) for filing the information disclosure statement submitted herewith.

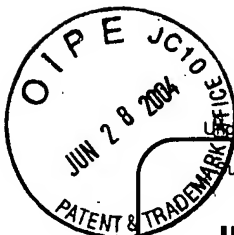
Respectfully submitted,

Dated: 6-25-04



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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1

of 1

Complete if Known

Application Number	10/659,881
Filing Date	September 11, 2003
First Named Inventor	Yoel Wazana
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	21101-0006

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 4,549,066	10-22-1985	Piccioli et al.	Entire Document
		US- 4,851,061	07-25-1989	Sorkoram	Entire Document
		US- 6,007,756	12-28-1999	Weiteder et al.	Entire Document
		US- 6,207,925 B1	03-27-2001	Kendall	Entire Document
		US- 6,233,010 B1	04-24-2001	Araki	Entire Document
		US- 6,491,361 B1	12-10-2002	Spann	Entire Document
		US- 6,653,210 B2	11-25-2003	Choo et al.	Entire Document
		US- 2004/0067326 A1	04-08-2004	Koerzer et al.	Entire Document
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

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